



| Parameter                               | Rating | Units    |
|-----------------------------------------|--------|----------|
| Drain-to-Source Voltage - $V_{(BR)DSX}$ | 350    | V        |
| Max On-Resistance - $R_{DS(on)}$        | 14     | $\Omega$ |
| Max Power                               |        |          |
| SOT-89 Package                          | 1.1    | W        |
| SOT-223 Package                         | 2.5    |          |

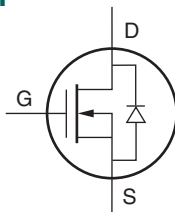
### Features

- 350V Drain-to-Source Voltage
- Depletion Mode Device Offers Low  $R_{DS(on)}$  at Cold Temperatures
- Low On-Resistance:  $8\Omega$  (Typical) @  $25^{\circ}\text{C}$
- Low  $V_{GS(off)}$  Voltage
- High Input Impedance
- Low Input and Output Leakage
- Small Package Size SOT-89 and SOT-223
- PC Card (PCMCIA) Compatible
- PCB Space and Cost Savings

### Applications

- LED Drive Circuits
- Telecommunications
- Normally On Switches
- Ignition Modules
- Converters
- Security
- Power Supplies
- Regulators

### Circuit Symbol



### Description

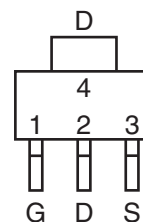
The CPC3708 is a N-channel, depletion mode Field Effect Transistor (FET) that is available in an SOT-223 package (CPC3708Z) and an SOT-89 package (CPC3708C). Both utilize IXYS Integrated Circuits Division's proprietary third-generation vertical DMOS process that realizes world class, high voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a highly reliable device, particularly for use in difficult application environments such as telecommunications, security, and power supplies.

CPC3708Z and the CPC3708C have a typical on-resistance of  $8\Omega$  and a drain-to-source voltage of 350V. As with all MOS devices, the FET structure prevents thermal runaway and thermally induced secondary breakdown.

### Ordering Information

| Part Number | Description                        |
|-------------|------------------------------------|
| CPC3708CTR  | SOT-89: Tape and Reel (1000/Reel)  |
| CPC3708ZTR  | SOT-223: Tape and Reel (1000/Reel) |

### Package Pinout:



| Pin Number | Name   |
|------------|--------|
| 1          | GATE   |
| 2          | DRAIN  |
| 3          | SOURCE |
| 4          | DRAIN  |



## Absolute Maximum Ratings @ 25°C

| Parameter                                 | Ratings     | Units |
|-------------------------------------------|-------------|-------|
| Drain-to-Source Voltage ( $V_{(BR)DSX}$ ) | 350         | V     |
| Gate-to-Source Voltage ( $V_{GS}$ )       | ±20         | V     |
| Total Package Dissipation <sup>1</sup>    |             |       |
| SOT-89                                    | 1.1         | W     |
| SOT-223                                   | 2.5         |       |
| Operational Temperature                   | -40 to +110 | °C    |
| Storage Temperature                       | -40 to +125 | °C    |

<sup>1</sup> Mounted on 1"x1" FR4 board.

*Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.*

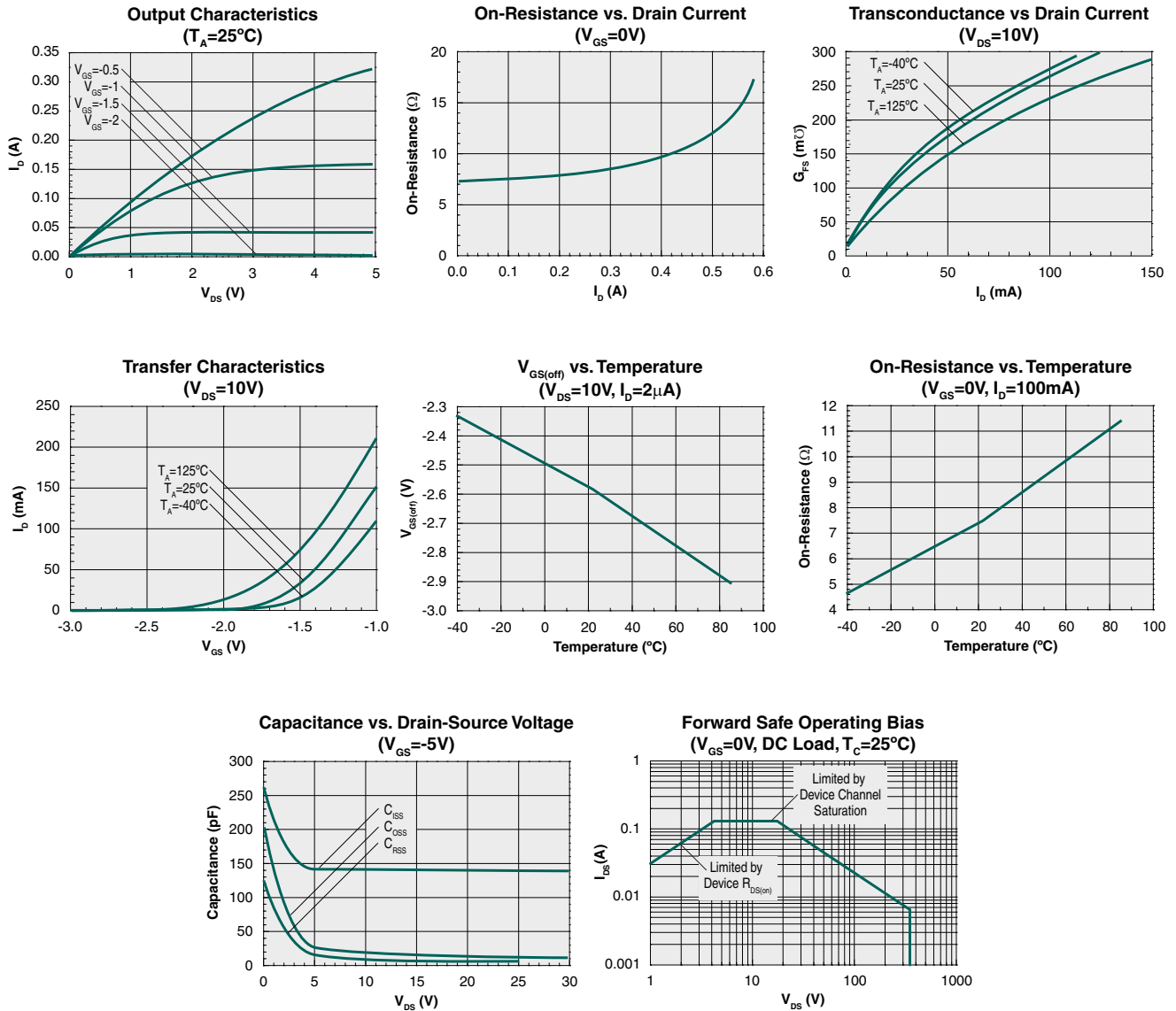
## Electrical Characteristics @25°C (Unless Otherwise Specified)

| Parameter                       | Symbol        | Conditions                             | Min    | Typ | Max    | Units |
|---------------------------------|---------------|----------------------------------------|--------|-----|--------|-------|
| Gate-to-Source Voltage          | $V_{GS}$      | $I_D=60mA, V_{DS}=5V$                  | -1.005 | -   | -1.735 | V     |
| Gate-to-Source Off Voltage      | $V_{GS(off)}$ | $I_D=2\mu A, V_{DS}=10V, V_{DS}=100V$  | -2     | -   | -3.6   | V     |
| Drain-to-Source Leakage Current | $I_{DS(off)}$ | $V_{GS}= -5V, V_{DS}=190V$             | -      | -   | 20     | nA    |
|                                 |               | $V_{GS}= -5V, V_{DS}=350V$             | -      | -   | 1      | μA    |
| Drain Current                   | $I_D$         | $V_{GS}= -2.7V, V_{DS}=5V, V_{DS}=50V$ | -      | -   | 5      | mA    |
|                                 |               | $V_{GS}= -0.57V, V_{DS}=5V$            | 130    | -   | -      | mA    |
| On-Resistance                   | $R_{DS(on)}$  | $V_{GS}= -0.35V, I_{DS}=50mA$          | -      | 8   | 14     | Ω     |
| Gate Leakage Current            | $I_{GSS}$     | $V_{GS}=±20V$                          | -      | -   | 100    | nA    |
| Gate Capacitance                | $C_{ISS}$     | $V_{DS}= V_{GS}=0V$                    | -      | -   | 300    | pF    |

## Thermal Resistance

| Package | Parameter           | Symbol          | Conditions | Min | Typ | Max | Units |
|---------|---------------------|-----------------|------------|-----|-----|-----|-------|
| SOT-89  | Junction to Case    | $R_{\theta JC}$ | -          | -   | -   | 50  | °C/W  |
|         | Junction to Ambient | $R_{\theta JA}$ |            |     |     | 90  |       |
| SOT-223 | Junction to Case    | $R_{\theta JC}$ | -          | -   | -   | 14  |       |
|         | Junction to Ambient | $R_{\theta JA}$ |            |     |     | 55  |       |

**CPC3708Z (SOT-223) PERFORMANCE DATA \***



\*The Performance data shown in the graphs above is typical of device performance in SOT-223 Package. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

| Device              | Moisture Sensitivity Level (MSL) Rating |
|---------------------|-----------------------------------------|
| CPC3708C / CPC3708Z | MSL 1                                   |

### ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

### Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

| Device              | Maximum Temperature x Time |
|---------------------|----------------------------|
| CPC3708C / CPC3708Z | 260°C for 30 seconds       |

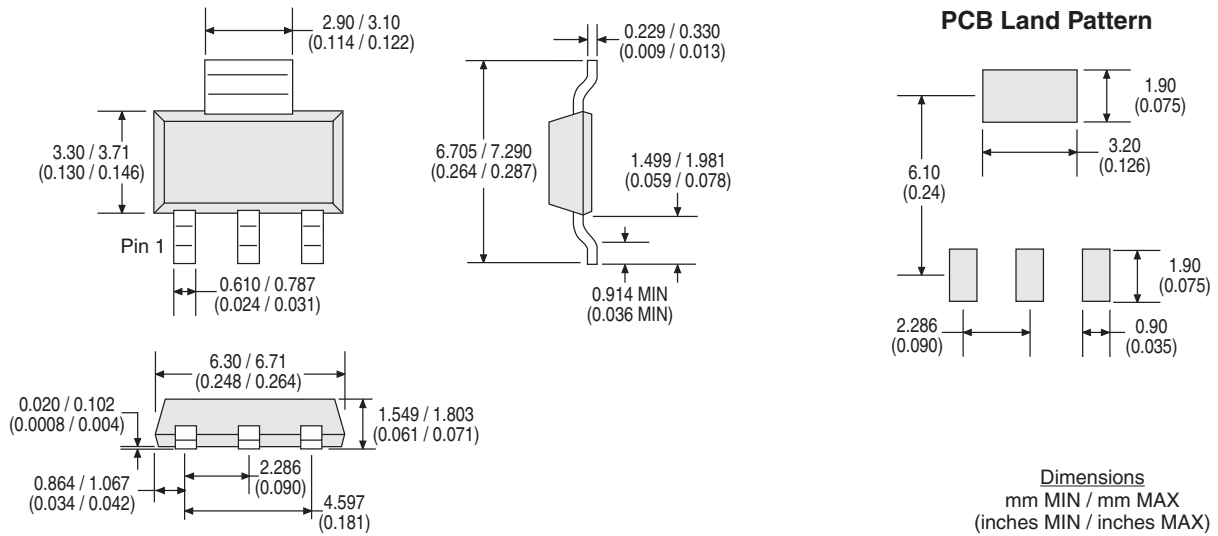
### Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable, and the use of a short drying bake may be necessary. Chlorine-based or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

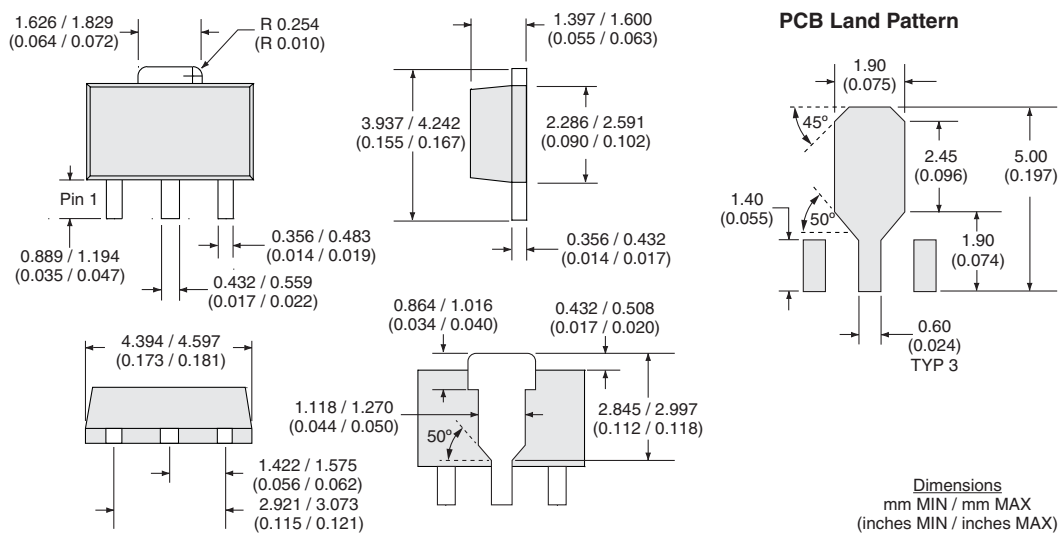


## MECHANICAL DIMENSIONS

### CPC3708Z

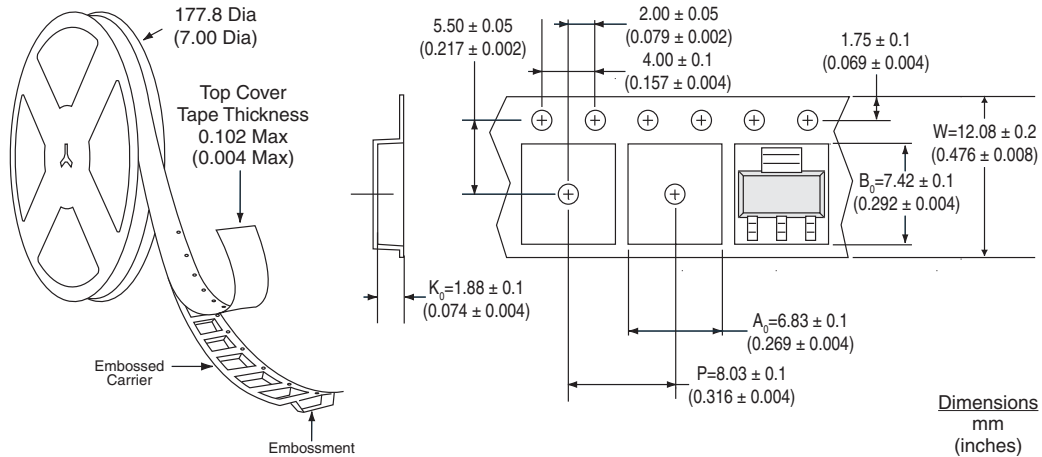


### CPC3708C

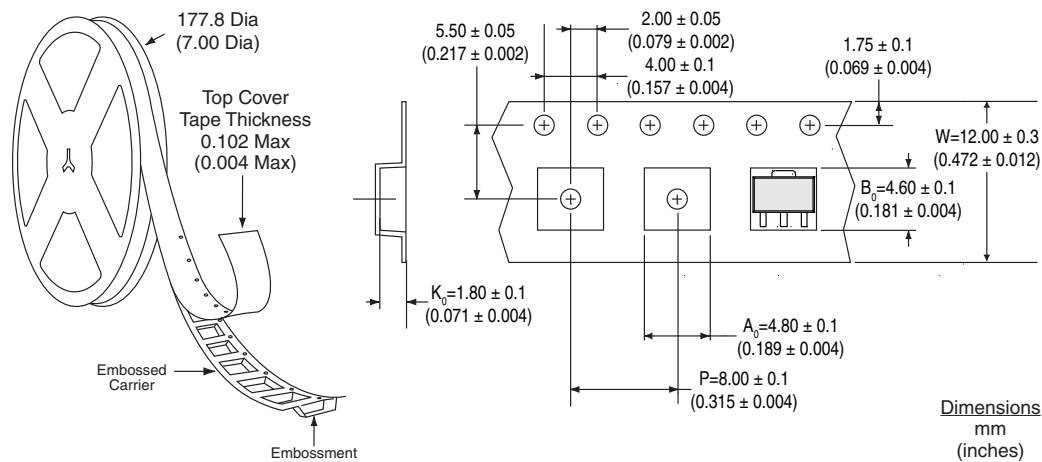


## MECHANICAL DIMENSIONS

### CPC3708ZTR Tape & Reel



### CPC3708CTR Tape & Reel



For additional information please visit our website at: [www.ixysic.com](http://www.ixysic.com)

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